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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/020,986	12/19/2001	Jae Yong Park	049128-5052	1161

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EXAMINER
ROY, SIKHA

ART UNIT	PAPER NUMBER
2879	

DATE MAILED: 08/27/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 07-01)

Office Action Summary	Application N .	Applicant(s)	
	10/020,986	PARK ET AL.	
	Examiner	Art Unit	
	Sikha Roy	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 December 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The disclosure is objected to because of the following informalities:

Page 11 line 13, 'supporting film 9' should be replaced by --supporting film 19--.

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter of ultraviolet-hardening resin in claim 33.

Appropriate correction is required.

Claim 21 is objected to because of the following informality.

Page 24 line 4 'is prevents' should be replaced by --prevents--.

Claims 6,15,29 line 2, 'Eg' should be replaced by --eg.--.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 5,14,28 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the

invention. The moisture-absorbing agent is provided at the inner side of the seal cover plate and opposing the metal electrode and hence it is not attached to the electroluminescent layer. Hence it is not described in the specification how the moisture absorbing agent can be detached from the electroluminecent layer to which it is not attached as claimed in claim 5.

Claims 14 and 28 essentially recite the same limitation as of claim 5 and hence are rejected for the same reason.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1,2,4 – 6,9 -11,13 -15,18,19-21,25 - 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted prior art and further in view of U.S. Patent 6,383,048 to Yang et al.

Referring to claim 1 applicants' admitted prior art discloses (specification page 4 Fig. 1) an electroluminescent device comprising a transparent substrate 1, a plurality of pixel areas including plurality of scanning lines and data lines formed on the substrate, plurality of pixel electrodes 2a formed on the plurality of pixel areas, electroluminescent layer 3 formed over the pixel electrodes, a metal electrode 4 formed on the

electroluminescent layer, a seal cover plate 7 for sealing the EL layer and a sealant 6 for adhering the seal cover plate 7 to the transparent substrate 1.

The applicants' admitted prior art does not disclose the heat-exhausting layer formed on the metal electrode.

Yang in analogous art of organic polymer displays discloses (abstract, column 2 lines 5-10 Fig. 2C) an organic polymer EL display with a heat exhaust (dissipating) layer 28 formed on the metal electrode (cathode). It is to be noted that heat generated during the operation of the display results in disintegration of the organic layers limiting the lifetime of the display. Yang discloses that by using this heat-dissipating layer the heat generated by the EL display can be dissipated and hence the lifetime of the display can be enhanced.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include the heat exhaust layer formed on the metal electrode as taught by Yang to the electroluminescent display disclosed by applicants' admitted prior art for dissipating heat generated by the EL display and hence enhancing its life.

Regarding claim 2 applicants' admitted prior art discloses (Fig.1) a protective film 5 formed between the seal cover plate and the heat exhaust layer formed on the metal electrode.

Regarding claims 4-6, applicants' admitted prior art discloses (Fig.1 page 4 [0013]) a moisture absorbing agent 8 formed of fine powder containing any one of BaO, $CaCO_3$, silica-gel, alumina is provided at the inside of the seal cover plate opposed to the metal electrode to absorb moisture and oxygen from the electroluminescent layer. It

is further disclosed (page 4 lines 9-11) a supporting film 9 formed from semi-transmitting film is used for adhering the moisture absorbing agent to the inner side of the seal cover.

Regarding claim 9, here the applicant is claiming the product of electroluminescent device including a method (i.e. a process) of making the heat-exhaust layer, consequently, claim 9 is considered "product-by-process" claim. In spite of the fact that a product-by-process claim may recite only process limitations, it is the product and not the recited process that is covered by the claim. Further, patentability of a claim to a product does not rest merely on the difference in the method by which the product is made. Rather, is the product itself which must be new and not obvious. As such, no patentable weight has been given to the process recited in claim 9 (see MPEP 2113).

Claim 10 recites the same limitations as of claim 1 except for the heat –exhaust layer formed on the seal cover plate instead of on the metal electrode.

Applicants admitted prior art and Yang disclose the claimed invention except for the heat exhausting layer formed on the seal cover plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the heat exhausting layer on the seal cover plate, since it has been held that rearranging parts of the invention involves only routine skill in the art.

Regarding claim 11 the applicants' admitted prior art discloses (page 4 line 8 Fig.1) a protective film 5 is formed on the metal electrode 4.

Claim 13-15 recite the same limitations as of claims 4-6 and hence are rejected for the same reasons (see rejection of claims 4-6).

Claim 18 recites the same limitations as of claim 9 and hence is rejected for the same reason (see rejection of claim 9).

Referring to claim 19 applicants' admitted prior art and Yang disclose the claimed invention except for the heat exhausting layer formed on the protective film. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the heat exhausting layer on the protective film, since it has been held that rearranging parts of the invention involves only routine skill in the art.

Referring to claim 20 the applicants' admitted prior art discloses (Fig. 1) the seal cover plate provided on the protective film 5 and a sealant for adhering the seal cover plate to the transparent substrate. As the protective film has the heat exhaust layer formed on the protective film, it would have been obvious to specify the seal cover plate provided on the heat exhaust layer sealing the electroluminescent layer and adhered to the transparent substrate by a sealant.

Regarding claim 21, the heat exhaust layer being formed on the protective film, protects the protective film underneath.

Claim 25 recites the same limitations as of claim 9 and hence is rejected for the same reason (see rejection of claim 9).

Claim 26 differs from applicants' admitted prior art in that applicants' admitted prior art does not disclose a metal thin film provided on the seal cover plate.

Yang in embodiment 2 discloses (column 4 lines 55-60 Fig. 3D, claim 9) a covering layer 40 consisting of a high thermal conductivity metal deposited on the heat dissipating layer. Yang further discloses this metal layer enhances the effect of heat dissipation.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include a metal thin film provided on top of the electroluminescent structure of applicants' admitted prior art as suggested by Yang for enhancing the heat dissipation effect.

Referring to claim 26 applicants' admitted prior art and Yang disclose the claimed invention except for the metal thin film formed on the seal cover plate. It would have been obvious to one having ordinary skill in the art at the time the invention was made to rearrange the thin metal layer on the seal cover plate opposing the EL structure, since it has been held that rearranging parts of the invention involves only routine skill in the art.

Claims 27--29 recite the same limitations as of claims 4-6 and hence are rejected for the same reasons (see rejection of claims 4-6).

Referring to claim 30 Yang do not disclose the metal thin film adhering the entire surface of the seal cover plate.

It would have been obvious to one of ordinary skill in the art at the time of invention to include the metal film covering the entire surface of the seal cover plate opposing the EL structure for more heat dissipation with larger area.

Regarding claims 31 and 32 the applicants' admitted prior art and Yang disclose the claimed invention except for the metal thin film adhering to the portion of the seal cover where the moisture-absorbing agent and the sealant are not formed. It would have been an obvious matter of design choice to have the metal thin film adhering to the portion of the seal cover where the moisture-absorbing agent and the sealant are not formed since the applicant has not disclosed that this design of the thin metal film solves any stated problem and it appears that the invention would perform equally well with the thin film covering the entire seal cover plate.

Regarding claim 33 applicants' admitted prior art discloses (page 4 lines 14-17, Fig. 1) the sealant for adhering the seal cover plate and the metal film is epoxy resin which is known in the art to be an ultra-violet hardening (curing) resin.

Claims 3, 12 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted prior art and U.S. Patent 6,383,048 to Yang et al. and further in view of U.S. Patent 6,172,458 to Nakaya et al.

Claim 3 differs from applicants' admitted prior art and Yang in that they do not exemplify the protective film having single-layer or multi-layer structure of moisture absorbing or moisture-proof layer.

Nakaya in pertinent art of organic electroluminescent device discloses (column 7 lines 13-25) a layer of protective film with a certain thickness preventing the penetration of moisture. Nakaya further discloses this protective film also provides prevention of

oxidation of the electron-injecting electrode and hence stable driving period of the organic EL device is enhanced.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to include moisture-proof layer as taught by Nakaya in the protective film of the applicants' admitted prior art and Yang for preventing moisture penetration and oxidation of the electron-injecting electrode and hence enhancement of stable driving period of the organic EL device.

Claims 12 and 22 recite the same limitation as of claim 3 and hence are rejected for the same reason.

Claims 7,8,16,17 and 23,24 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicants' admitted prior art and U.S. Patent 6,383,048 to Yang et al. and further in view of U.S. Patent 6,180,176 to Gledhill et al.

Referring to claims 7 and 8 Yang discloses AlN_x, a high thermal conductivity material used for heat exhaust layer but do not disclose the heat exhausting material formed of carbon graphite material.

Gledhill in pertinent art of providing elastomer surfaces on supporting substrates discloses (column 10 lines 9-18) coating of carbon dag or graphite used for heat absorbent properties.

The selection of known materials for a known purpose is generally considered to be within the skill of the art. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the heat exhaust layer of AlN_x of Yang

formed of carbon material for its heat-absorbent properties as disclosed by Gledhill because the selection of known material for a known purpose is within the skill the art.

Regarding claim 8 Gledhill discloses (column 5 lines 33-35) graphite film used commercially as heat absorbent coating.

Claim 16, 17 recite the same limitations as of claims 7,8 respectively and hence are rejected for the same reasons (see rejection of claims 7,8).

Claim 23, 24 recite the same limitations as of claims 7,8 respectively and hence are rejected for the same reasons (see rejection of claims 7,8).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent 6,520,821 to Ishii et al. discloses an active carbon layer formed on the inner wall of encapsulation cap of an organic EL device. U.S. Patent 6,204,612 to Ebisawa et al. discloses an organic EL display with moisture absorbing agent disposed in the casing. U.S. Patent 5,821,692 to Rogers et al. and U.S. Patent 6,265,820 to Ghosh et al. disclose organic EL device with heat removing system inside the encapsulation package. U.S. Patent 6,195,142 to Gyotoku et al. disclose organic EL element with laminated film of two layers.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.

Sikha Roy
Patent Examiner
Art Unit 2879

ASHOK PATEL
PRIMARY EXAMINER